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DIVISION OF FORESTRY.

FOREST AND ORNAMENTAL TREE SEED AND SEEDLINGS FOR SALE AT THE GOVERNMENT NURSERY.

The Division of Forestry keeps constantly on hand at the Government Nursery, seed and seedlings of the important native and introduced trees. These are sold at prices just covering the cost of collection or growing.

The list includes both forest and ornamental trees, such as Silk Oak, Koa, various species of Eucalyptus, Golden and Pink Showers, Pride of India, Poinciana, Albizzia, etc. The price of the seed varies from 10 to 50 cents per ounce. The seedlings may be had for 2½ cents each, except a few kinds which are 5 cents. Seed of the various palms is also for sale; the price per 100 varying from \$1.00 to \$2.50. All seed is tested before being sent out, which insures its being good.

All communications in regard to seed or trees should be addressed to David Haughs, Forest Nurseryman, Box 207, Honolulu, Hawaii.

RALPH S. HOSMER,
Superintendent of Forestry.

DIVISION OF ENTOMOLOGY.

To give information about insects free of charge is one of the duties of this Division and Hawaiian readers are hereby invited to make inquiry in person and by mail. In order to be able to advise intelligently or send the right kind of useful insects for relief we like and sometimes it is indispensable for us to see the insect suspected or caught in the act, also specimens of the injury. In a tin with a hole or two, or a wooden box specimens may be mailed at 3rd class rates. When specimens are not accompanied by letter *always* write your name and address in the upper left-hand corner of the package. Address all communications SUPERINTENDENT DIVISION OF ENTOMOLOGY, P. O. BOX 207, HONOLULU, HAWAII.

EDW. M. EHRHORN,
Superintendent.

THE HAWAIIAN FORESTER AGRICULTURIST

VOL. IX.

AUGUST, 1912.

No. 8.

This is the "Annual Reports" number of the Forester and Agriculturist, containing a resume of the work of a year in every division of the Department of Agriculture and Forestry by its chief. It should be preserved for reference by all subscribers, although it is to be hoped that few fail to preserve all numbers of the magazine for adding to their libraries in bound form.

The bureau of agriculture of the Philippine Islands is taking up the culture of date palms, and among other things is planning to plant 150 at Lamao experiment station to form an avenue of these palms to be known as Eden avenue. This name is chosen from the fact that the fruit from which the seed is taken came from the Garden of Eden, or at least that portion of the old world in which it is generally acknowledged the Garden of Eden was located.

A broadside has been received giving announcement of the Seventh International Dry Farming Congress—the "World's Greatest Agricultural Convention"—to be held at Lethbridge, Alberta, Canada, October 21-26, 1912. All farmers are invited to attend and participate in the event. This congress of farmers will consist of nine sectional conventions, as follows: Conference on Soils, Tillage Methods and Machinery; Conference on Crops and Crop Breeding; Conference on Agricultural Forestry; Conference on Live Stock and Dairying; Conference on Agricultural Education; Conference on Farm Management; Conference on Scientific Research; Conference of Agricultural Colleges and Experiment Stations, and International Congress of Farm Women (Rural Home Section of the International Dry Farming Congress). The Congress will be formally opened on Monday, October 21, at 11 a. m., by His Royal Highness the Duke of Connaught, Governor General of Canada, for the government of Great Britain, and Honorable James Wilson, Secretary of Agriculture of the United States, as personal representative of President William Howard Taft. The international delegates will include distinguished agriculturists of many countries. The governors of some American states, government officials of the Dominion of Canada and all western provinces will be in attend-

ance. Delegates may be appointed by governors, mayors, and all agricultural bodies and commercial organizations, but every farmer is invited without the formality of credentials, and all discussions will be open to farmers. Address all communications to John T. Burns, Executive Secretary-Treasurer, Lethbridge, Alberta, Canada.

CONTAGIOUS ABORTION AND MILK.

Circular No. 198 of the Bureau of Animal Industry, United States Department of Agriculture, reports the discovery that the bacterium of contagious abortion of cattle, occurs in milk. The organism was found in 8 samples of market milk among 77 samples tested (over 11 per cent.), and in the milk distributed by 6 among 31 dairies (over 19 per cent.). The discovery was made as the result of investigations conducted by Dr. John R. Mohler, chief of the Pathological Division. When milk containing the organisms was injected into guinea pigs, it produced lesions resembling closely those of tuberculosis. The effect on human beings is not known, but the circular states that the phenomenon is ominously serious to public health, and that "the bacillus forms another link in the long chain of facts that point unmistakably to the proper pasteurization of all milk before it is used as food as a measure essentially necessary for the protection of the public health."

APPRECIATION FROM CALIFORNIA.

San Francisco, April 18, 1912.

Daniel Logan, Editor The Forester, P. O. Box 366, Honolulu, T. H.

Dear Sir:—Referring to your issue of March, Vol. IX, No. 3, I beg leave to express my hearty appreciation of the value of the paper by Ralph S. Hosmer on the proposed reclamation of the Island of Kahoolawe. It is such painstaking and meritorious work now being carried on by so many in the public service, that rolls up such a grand total of accomplishment for good throughout our entire country.

Your publication is received regularly by the Sierra Club, and I assure you is appreciated, as it is the exponent for the Hawaiian Islands in those achievements for which the Sierra Club, at least in certain directions, carries on its activities. You have our hearty best wishes for every good achievement in the field of endeavor, which you particularly stand for.

Very truly yours,

E. T. PARSONS,
Member Editorial Board of Sierra Club Bulletin.

*ANNUAL REPORTS OF DIVISIONS OF FORESTRY,
ENTOMOLOGY AND ANIMAL INDUSTRY.*

Honolulu, July 25, 1912.

To the Commissioners of the Board of Agriculture and Forestry,
Honolulu, T. H.

Dear Sirs:—I beg to transmit herewith, for publication in the Forester and Agriculturist, copies of the Annual Reports of the Superintendents of Forestry, Entomology and Animal Industry for the calendar year 1911.

Yours truly,

W. M. GIFFARD,

President and Executive Officer, Board of Agriculture and Forestry, T. H.

DIVISION OF FORESTRY.

Honolulu, April 10, 1912.

Board of Commissioners of Agriculture and Forestry,
Honolulu, Hawaii.

Gentlemen:—I have the honor to submit as follows a brief report covering the main lines of work carried on by the Division of Forestry during the calendar year 1911.

In conformity with established policy the efforts of the Division were directed chiefly (1) to measures looking to the maintenance in good condition of the native forests, particularly those set apart as forest reserves, and to the extension of the forest reserve system; (2) to the encouragement of tree planting on government land and also by private owners, both through advice as to where, what and how to plant and through supplying plant material free, or at cost price; (3) to the giving of assistance, in person, by letter and by publications to persons desiring information on forest matters; (4) to carrying forward, as far as limited funds permitted, the experimental planting of trees and shrubs new to Hawaii; and (5) to protecting local forests from fire through the maintenance of a forest fire organization.

For the nine months' period from April 1 to December 31, 1911, during which a monthly allotment of \$3,500 was made to the Board of Agriculture and Forestry for the Conservation Fund for routine work, the amounts expended by the Division of Forestry were for salaries and pay rolls \$7,408.65, for current expenses \$730.58, a total of \$8,139.23.

During the year there was turned in to the treasury of the Territory from the Division of Forestry, as government realizations, a total of \$612.75, made up as follows:

Sale of plants, Government Nursery.....	\$401.35
“ “ seeds, Government Nursery	13.40
“ “ wood, Tantalus forest	48.00
“ “ plants, Homestead, Kauai, Nursery.....	150.00
	\$612.75

FOREST RESERVES.

During the year two new forest reserves were created, South Kona and Puna, respectively in the Districts of Kona and Kau and of Puna, on the Island of Hawaii. The South Kona Forest Reserve has a total area of 36,952 acres, of which 29,260 acres, 79 per cent., is government land. The Puna Forest Reserve was set apart June 29, 1911. The area is 19,850 acres, all government land.

In Hawaii the greater portion of the forest area set apart, is reserved because of the value of the forest as a protective cover, which under the conditions of climate and topography that obtain locally, is needed to safeguard the headwaters of the streams that are diverted for use in irrigation. In other words, most of the Hawaiian forests are of what has been termed the “water bearing” class. In both of the reserves created in 1911, on the contrary, the primary importance of the forest is on account of the timber value of the trees, present or prospective. Both are in districts where there are no running streams. In both the forest is of the “commercial forest” class.

In February, 1911, the boundaries of two of the older forest reserves, West Maui and Kau, were slightly modified and the areas a little increased. At the end of the year there were 25 forest reserves with a total area of 631,956 acres, of which 435,657 acres, 69 per cent., is government land.

In June, 1911, under the terms of a logging license issued prior to the creation of the reserve, the sum of \$2,955 was paid to the Board of Agriculture and Forestry for timber to be cut in the Puna Forest Reserve. Under the forest law this money can be used elsewhere in the Territory for forest work. Up to the end of the year it has not been drawn against.

Progress was made during the year on a number of other forest reserve projects, in the way of examination in the field or the completion of the technical descriptions of boundary. Condemnation proceedings instituted by the government for the acquisition of a portion of the lands of Kehena 2 on the Kohala Mountain, which it is proposed be included in the Kohala Mountain Forest Reserve, were still pending at the end of the year.

FOREST PLANTING.

The second main line of work carried on by the Division of Forestry is the encouragement of tree planting both on government land and by private owners. Under a special allotment of the Conservation Fund a contract was entered into in May, 1911, with Mr. A. W. Carter, Manager of the Parker Ranch, for the planting of an area of approximately 50 acres on the Kohala Mountain above Waimea village, Island of Hawaii, in accordance with a planting plan drawn up by the Division of Forestry. Planting was begun in the summer and was in progress at the end of the year. The object of this work is to reclothe with trees open areas on the watersheds of streams that are needed for economic use on the Waimea plains. The trees planted are mainly Eucalypts. The seedlings were raised at the Parker Ranch Nursery at Waimea.

Under another special grant from the Conservation Fund the contract for forest planting at Pupukea, Oahu, begun in 1910, was completed in the early part of 1911. The bulk of the planting was accepted in April; final payment was made in October. About 30 acres were planted.

Owing to limited funds only these two forest planting projects were carried on in 1911 directly by the government, but considerable other planting was done on government land at private expense, under requirements of government land leases, or through special agreements, or voluntarily by corporations or individuals holding the lands for a long enough time to enable them to be willing to undertake planting.

In December a planting plan was drawn up by the Division of Forestry for government lands in the Kula District, Maui, held by Cornwell Ranch under a government lease requiring tree planting. Earlier in the year inspections were made of tree planting in progress, under similarly worded government leases on the Parker Ranch and the Kukaiau Ranch on Hawaii. Visits of inspection were also made during the summer and autumn to the Islands of Lanai and Kahoolawe, to various forest lands on Oahu, and to the land of Muliwai, Hamakua, Hawaii, the high plateau between Waipio and Waimanu gulches.

In September a general program of forest planting was worked out at the request of the Alexander & Baldwin interests, for the lands lying along the irrigation ditches in the Koolau district on Maui. The object of this project is to replace the forest cover on the area where it has been opened up in recent years through one and another cause. Much of the area to be planted is government land. Planting under this plan began in the autumn of 1911 and is actively going on.

To study conditions in the native forest on the windward side of Maui and to confer with the local forest officials in regard thereof, arrangements were made in the early spring of 1911,

whereby Mr. H. M. Curran of the Philippine Bureau of Forestry, made a month's visit to Hawaii in April and May. A brief report containing the recommendations made by Mr. Curran was published in June, 1911, issue of the Hawaiian Forester and Agriculturist.

Forest planting under private auspices was more general throughout the Territory in 1911 than in any earlier year. Exact figures by plantations are not available, but the total number set out was probably close on a million trees. The figure for 1910 was 725,000. In this work the Division of Forestry had a considerable share for over 587,000 seedling trees were sold or given away from the Government Nursery during 1911, of which 339,000 were furnished to corporations doing extensive planting. Under an arrangement whereby plantations are supplied with tree seedlings in boxes, just ready for the first transplanting, a number of companies that had not before cared to be bothered with the details of getting nursery stock ready, in 1911 undertook tree planting.

Tree planting by sugar plantation companies is usually done, either to provide windbreaks for exposed cane fields, particularly along the sea shore on the windward side of the islands, or to establish groves from which fuel wood may in time be cut. The good results obtained in recent years will undoubtedly lead to a further extension of this work.

Following is a statement of the trees given out during 1911 from the Government Nursery at Honolulu, including the branch Nursery in Makiki Valley used in part as a propagating station, and from the sub-nurseries maintained by the Division of Forestry at Hilo, Hawaii, and at Homestead,, Kauai:

FROM THE GOVERNMENT NURSERY AND MAKIKI STATION.

Sold and given gratis, including Arbor Day, January 1 to December 31, 1911:

Regular Distribution.

	In seed boxes.	In boxes transplanted.	Pot grown.	Total.
Sold	159,350	12,282	9,349	180,981
Gratis	35,900	9,823	10,184	55,907
Arbor Day		1,508	10,000	11,508
	195,250	23,613	29,533	248,396

Special Plantation Orders.

Jan. to June, 1911..	114,000			114,000
June to Dec., 1911..	214,000	11,000		225,000
	328,000	11,000		
Totals	523,250	34,613	29,533	587,396

FROM THE SUB-NURSERY AT HILO.

For the calendar year 1911, Brother Matthias Newell reports that 12,104 seedling trees were given out from the Hilo Nursery. The species in demand were several Eucalypts, Ironwood, Silk Oak, Monterey Cypress, Japanese Cedar and various ornamentals. Considerable attention was paid to growing trees for school grounds and many seedlings were given out to school children to plant at home.

FROM THE SUB-NURSERY AT HOMESTEAD, KAUAI.

Mr. Walter L. McBryde, Special Agent in charge of the Homestead Nursery, says:

"Our records show that during the year 1911 we sold and gave away free to homesteaders some 11,239 trees. Had we had a larger number of trees on hand we no doubt would have been able to increase this amount, by at least double."

In addition to the distribution there were planted out in the Papapaholahola Experimental Reserve something over 4,000 trees. These, with the other trees planted in former years, are making good growth.

ADVICE AND ASSISTANCE.

Continuing the custom of former years much of the time of the Forest Nurseryman in 1911 was taken up in giving advice, verbally and by letter, to persons desiring information about the planting and care of trees. That this is a useful branch of the work of the Division of Forestry is attested by the many applications that are constantly being received. When necessary a visit is made to the premises where the work is to be done so that local conditions can be studied on the ground.

On the side of education in forestry various speeches and addresses were made during the year by the Superintendent of Forestry, more particularly in connection with Arbor Day and before the Hawaiian Sugar Planters' Association at its annual session in December.

In addition to the regular routine reports and those having to do with forest reserve and other special projects, the Superintendent of Forestry prepared during the year a number of articles on forest subjects for the newspapers or for the Hawaiian Forester and Agriculturist. Not a little of his time was given during the first three months of the year to seeing through the press the Report of the Board of Agriculture and Forestry for the biennial period ending December 31, 1910.

In May there was issued as Bulletin No. 1 of the Division of Forestry an illustrated bulletin entitled "Eucalytus Culture in Hawaii," by Mr. Louis Margolin of the U. S. Forest Service.

This bulletin is the result of the investigation carried on in 1910 with the coöperation of the Forest Service, when all the planted groves of Eucalypts in Hawaii were visited and all the information locally available in regard to Eucalypts got together. An edition of 3,000 copies was printed. The bulletin was given a wide distribution throughout the Territory.

SPECIAL INVESTIGATIONS.

Part of the duty of the Division of Forestry is to introduce into Hawaii exotic trees and shrubs of economic importance, that will grow here and be of service to the people of the Territory. This work of plant introduction is carried on principally at the Government Nursery at Honolulu and the Experimental Garden in Makiki Valley. During 1911 many plants new to Hawaii were started and made ready for distribution. The only way definitely to find out how exotic trees will succeed here is to try them. This is a line of work to which more attention should be paid.

In this connection it is appropriate to note that for several years now the Federal Forest Service has made annually an allotment for experimental forest planting in Hawaii. In the beginning all the money was used for the trial of temperate zone trees in fenced enclosures on the upper slopes of Mauna Kea and Mt. Haleakala. In 1911 an experimental plantation of Eucalypts was established in Nuuanu Valley. Sample plots of eighteen different species were planted—kinds little known in Hawaii, but reputed to be of economic importance. It is expected that an additional block can be started in 1912.

Until September, 1911, Mr. Joseph Rock was a regular member of the staff of the Division of Forestry, when he was transferred to the faculty of the College of Hawaii. Mr. Rock continues, however, as an honorary officer of the Board with the title of "Consulting Botanist."

In the spring Mr. Rock made collecting trips to Hawaii and Maui and in the summer again visited the Kau District on Hawaii. On each of these expeditions he collected much new herbarium material which was added to the collection. Pending the completion of the new building of the College of Hawaii, Mr. Rock continues to occupy quarters at the Board office on King street.

In September, 1911, there was issued as Botanical Bulletin No. 1 of the Division of Forestry, an illustrated 15 page pamphlet entitled "New and Noteworthy Hawaiian Plants."

In December another similar bulletin was issued by the College of Hawaii describing some additional new species, under the title "Notes upon Hawaiian Plants with Descriptions of New Species and Varieties."

By means of a fund raised through private subscription Mr. Rock expects in the near future to publish an illustrated book on

the native trees of Hawaii based upon data collected by him during his connection with this Board.

FOREST FIRE RECORD.

With the exception of a few small forest and grass fires on Oahu and a couple on Kauai all of which were, however, extinguished before serious damage had resulted, the forest fire record for 1911 is fortunately small. One of the fires on Oahu occurred in Manoa Valley in April, the other above Waialua in July. The fires on Kauai were in the woods back of Kilauea. Both occurred in June.

As in earlier years one ranger was employed throughout the year to patrol the Tantalus forest and to oversee the burning of brush, under permit, on Tantalus Heights.

Several changes in the staff of the volunteer fire wardens were made during the year, by which the efficiency of the service as a skeleton organization is maintained.

Very respectfully,

RALPH S. HOSMER,
Superintendent of Forestry.

DIVISION OF ENTOMOLOGY.

Honolulu, December 31, 1911.

Honorable Board of Commissioners of Agriculture and Forestry,
Honolulu, T. H.

Gentlemen:—I have the honor to submit herewith the eighth report of the Division of Entomology, covering the work performed by my department during the calendar year 1911.

By far the greater portion of the work performed by the division during 1911 consisted in the quarantine inspection of agricultural and horticultural products, arriving from various countries by steamers and sailing vessels. In addition to this work we undertook the Inter-Island Inspection on July 1, 1911, adding two inspectors to our department whose main duty is the inspection of all shipments of fruits and plants in the freight and baggage of the Inter-Island traffic.

The working staff of the division remained about the same as in 1910 except that Mr. H. O. Marsh resigned his place in February on account of ill health and although we had hoped to obtain another assistant, we were unable to do so on account of the shortage of available funds. On November 15 we were able to obtain the services of Miss Louise Gulick as laboratory assistant

for half-day service to relieve the work in the laboratory caused by the breeding out of fruitfly material.

During 1911 we inspected 380 vessels, of which we found 216 carrying vegetable matter, amounting to 11,157 lot shipments, which consisted of the enormous total of 187,997 packages. Of this amount 178,559 were packages of fruits and vegetables, 2,517 were seeds and 921 were plants. Of these shipments we destroyed by burning 367 shipments, amounting to 1,000 packages, 26 packages were returned and 1,464 packages were fumigated before delivery.

The great increase of fruit and vegetable shipments from the coast and the increase in the steamer service and other freight shipments from foreign countries makes the work very arduous and at times, owing to the shortage of inspectors, very trying. Were it not for the excellent equipment we have on the Oceanic, Hackfeld (now Matson Steam Navigation Co.), and Alakea docks, which latter is our waterfront office for Inter-Island inspection, we would not be able to cope with the important work. Further assistance and larger funds will be absolutely necessary as soon as the Panama Canal traffic starts, for without question, there will be a very material increase in imports of all classes. We have been unable to carry on much work in the distribution of beneficial insects, despite the fact that many requests have been made for such work. All this is on account of the inability of the Board of Agriculture and Forestry to supply the necessary assistant in the laboratory owing to the lack of funds. For the same reason we have only been able to spare moments to attend to the upkeep of the valuable insect collection and have not had time to make many additions to it. The Superintendent has donated a series of named beetles of North America, which adds considerably to the office collection.

INTER-ISLAND INSPECTION.

In November, 1910, shortly after the discovery of the Mediterranean fruitfly on Oahu, the Board of Agriculture and Forestry passed Rule VII, which was duly signed by the Governor. This rule was passed for the purpose of preventing the spread of this pest from Oahu to the other islands and although we were able, through the coöperation of the Inter-Island Steam Navigation Company to prevent freight shipments of fruits and vegetables leaving Oahu to the other islands, we were unable, on account of the lack of funds and inspectors, to examine baggage and packages belonging to individual passengers leaving on the local steamers as our regular quarantine work required all our attention. It was not until July 1, 1911, over six months later, that adequate funds, \$6,000 for a period of fifteen months, were available, that actual work was installed. Two inspectors were employed and the search of all questionable baggage and parcels

taken on Inter-Island boats was then started. Although we all realized that this outgoing inspection would in a measure help prevent many infested shipments from leaving Honolulu, yet we fully realized that the system was not as efficient as the regular inspection of incoming shipments usually practiced in the foreign Quarantine Inspection of the Board of Agriculture and Forestry and other Boards of Agriculture on the mainland. However, under existing conditions and the difficulty of finding qualified men at the ports of the other islands and considering the enormous expense entailed with only a small amount available, the only possible system to adopt was that now in vogue. It was soon found that Rule VII was not broad enough to cover the requirements of the inspection and the Board of Agriculture and Forestry replaced Rule VII by Rule IX, which made the law more stringent. Rule IX was duly signed by the Governor on June 28, 1911. We soon found that many complaints were being sent in regarding shipment of taro and root crops, much in demand for food, with the request that provision be made allowing such shipment to go if used for poi making and food. Again, the matter was gone over and finally the Board passed Rule XI which took the place of Rule IX, by adding a proviso for taro, lily roots and other tubers used in the manufacture of poi and other foods. Rule XI was duly signed by the Governor on December 18, 1911.

Owing to the stand taken by the State of California in regard to fruit shipments from Hawaii since the outbreak of the Mediterranean fruitfly the larger shippers of pineapples and bananas, the only fruit still permitted to enter California, have had to compete with a lot of poorly graded and badly infested fruit in competition with their clean shipments. In looking over the field and possible means of overcoming such conditions, the Superintendent recommended the passing of Rule XII, which gives the Board the power to enter into and inspect any premise, property or field with trees, plants or crops and on finding conditions thereon to the detriment of the fruit industry, to recommend remedies therefor or to abate the nuisances.

The passage of this rule, which was signed by the Governor on December 30, 1911, will no doubt do much towards a better practice of clean cultural methods.

There is a marked improvement in some of the banana plantations through the cleaning up of old worthless plants which were badly infested with scale insects and the gathering and burning of all old leaves and rubbish, but only a few have been induced to carry out this method. The same can be said of the cotton fields where all infested bolls are gathered and burned. By the passing of Rule XII much of this work can be enforced with good results.

The banana industry of the Territory is a profitable one and generally speaking, banana culture is not hampered with any disease or pest when up to date cultural methods are used. Owing

to an outbreak of a serious disease of the banana in Central America, the West Indies and adjacent countries and in view of the fact that there was a possibility of bringing into the Territory banana plants from these sections, the Board of Agriculture and Forestry passed Rule VIII prohibiting the introduction of any banana fruit, banana sprouts or plants from Central America, including the Panama Canal Zone, the West Indies, Dutch Guiana or any other locality where the said disease exists or may become known to exist. An act passed by the last legislature to regulate the importation and sale of seed into and within the Territory did not provide funds for the appointment of a Territorial Seed Inspector; as my department has in the past inspected all seeds to prevent the introduction of seed pests, the duty now has fallen on my division to examine and sample seed shipments coming into the Territory. During the year we have kept samples of various forage seeds which were imported for planting. In every instance the seed was found very free from adulterations. Not being equipped for a thorough seed test by sprouting, no experiments were conducted on these lines.

Appended hereto are some tabulations showing the total arrival of vessels, their contents of vegetable matter and the disposition of the various shipments. Also a list of the pests intercepted in the inspection work.

Respectfully submitted,

E. M. EHRHORN,
Superintendent of Entomology.

Injurious insects and diseases intercepted which were found on shipments of fruits, vegetables and plants imported into the Territory during 1911:

ORTHOPTERA—Eggs of *Holocloro* species in peach twigs, Japan; *Phyllodromia germanica*, *Periplaneta americana*, *Paus-tralasiae*—in various shipments of merchandise and vegetables from the Orient.

THYSANOPTERA—*Heliothrips haemorrhoidalis* on camelia, Sydney.

HEMIPTERA (*Heteroptera*)—*Capsus* species on pine tree, Japan; *capsus* species on orchids, Manila; Tingid species on orchids, Manila; *Aradid* species on orchids, Manila.

HEMIPTERA (*Homoptera*)—*Chermes* species on pine tree, Japan; *Lachnus* species on pine tree, Japan; *Macrosiphum san-borni* on chrysanthemum, Ohio, U. S. A.; *Aleyrodes citri* on orange leaves, Japan; *Aspidiotus cyanophylli* on palm, Florida; *Aspidiotus cydoniae* on cocoanut, Central America; *Aspidiotus perniciosus* on peach tree, Japan; *Aspidiotus nederæ* on lemons, Sydney; *Chrysomphalus biformis* on cocoanut, Central America; *Ceroplastes rusci* on loquat, Japan; *Coccus hesperidum* on *Rhodea japonica*, Japan; *Chionaspis permutans* on lemons, Syd-

ney; *Diaspis baisduvali* on orchids, Manila; *Hemichionaspis aspidistrae* on rhodea japonica, Japan; *Lepidosaphes beekii* on nursery stock, Japan; *Lepidosaphes euryae* on camelia, Japan; *Lepidosaphes uniloba* on rhodea japonica, Japan; *Leucaspis japonica* on maple tree, Japan; *Pinnaspis* species on oranges, Fiji; *Pulvinaria psidii* on maple tree, Japan; *Pseudococcus pinii* on juniper tree, Japan; *Pseudococcus azelae* on maple tree, Japan; *Pseudococcus* species on pineapple, Manila; *Parlatonia pergandii* on maple tree, Japan.

LEPIDOTERA—*Angumsis* grain moth on corn, Louisiana, U. S. A.; *Cnidocampus flavescens* on fruit trees, Japan; *Clisiocampa* species (tent caterpillar) on fruit trees, Japan; Bag worm (three species), on tea plant, loquat, pine tree, Japan; *Lycaenid* butterfly on orchids, Manila; *Poralipea modesta* on rice, Japan; *Parasa* species on maple tree, Japan; *Plodia interpunctella* on beans, Japan; *Porthetria dispar* (Gypsy moth) on plants, Japan; *Pyralis farinalis* on rice, Japan; Tineid leaf miner on citrus plants, Japan; Tortrix miner on ornamental plants, Japan; *Thysiodopteryx* species on camelia plants, Japan; *Thysiodopterix* species on thuya orientalis, Japan.

DIPTERA—*Phorbia brarsicae* on turnips, U. S. A.; Syrphid species on orchids, Manila; Tipulid on soil, Japan; Phorid on soil, Japan.

COLEOPTERA—*Actheopeus aterrimus* on orchids, Manila; *Adoretus* species in soil, Japan; *Balandinus rectus* in chestnuts, Eastern U. S.; *Balandinus probosideus* in chestnuts, Eastern U. S.; *Bruchus prosopis* in mesquito pods, Mexico; *Calandra grancria* in corn, U. S. A.; *Calandra oryzae* in rice, Japan; *Calandra linearis* in rice, Japan; *Calandra* species in quercus seed, Formosa; Carabid on orchids, Manila; *Cryptorhynchus* species on brownea seeds, Java; *Cylosformicarius* on sweet potatoes, Hongkong; Elaterid larvae on orchids, Manila; *Melolontha* species in soil, Japan; Scolytid on Brownea seeds, Java; Scarabaeid in soil, Japan; Staphylinid in soil, Japan; *Tenebrioides mauritonicus* on rice, Japan; *Tribolium ferrugineum* in rice, Japan.

HYMENOPTERA—*Formica nigra* on artichoke flowers, San Francisco; *Lasius interjectus* in soil on roots of plants, Japan; *Polyhachis dives* on plants, Japan; *Strumigenys lervisi* on tea plant, Japan; *Lasius niger* in soil, Japan; *Crematogaster sordidula* on pineapple, Manila; *Dolichoderus bituberculatus* on orchids, Manila.

MISCELLANEOUS—*Cladosporium citri* on citrus plants, Japan; Brown velvet lichen on maple and cherry trees, Japan.

RECAPITULATION OF INSPECTION WORK.

Vessels inspected, Honolulu.....	380	
Vessels found carrying vegetable matter, Honolulu..		216
Vessels inspected, Hilo.....	87	
Vessels found carrying vegetable matter, Hilo.....		40
	<u>467</u>	<u>256</u>

<i>Disposal of Shipments—Honolulu.</i>	<i>Lots.</i>	<i>Packages.</i>
Passed as free from pests.....	10,640	179,507
Burned	367	1,000
Returned	5	26
Fumigated	145	1,464
	<u>11,157</u>	<u>181,997</u>

<i>Disposal of Shipments—Hilo.</i>	<i>Lots.</i>	<i>Packages.</i>
Passed as free from pests.....		21,795
Burned		45
Returned		12
Fumigated	1,478	210

Grand Total	<u>12,635</u>	<u>204,059</u>
Fruits and vegetables inspected.....	200,487	
Plants inspected	955	
Seeds inspected	<u>2,617</u>	<u>204,059</u>

RICE SHIPMENTS.

Passed as free from pests.....	252,357 bags	
Fumigated on account of weevil.....	8,467 "	260,824
Corn fumigated	552 bags	
Beans fumigated	<u>900 "</u>	<u>1,452</u>

INTER-ISLAND INSPECTION.

For six months—July 1 to December 31, 1911.

Steamers attended	314
Packages of fruits, vegetables and plants passed.....	3,132
Packages of fruits, vegetables and plants refused shipment.	<u>590</u>
Total packages inspected	3,722

DIVISION OF ANIMAL INDUSTRY.

Preliminary Report of the Territorial Veterinarian for the Calendar Year 1910-1911.

Honolulu, May 31, 1912.

Hon. W. M. Giffard, President and Executive Officer and the
Board of Commissioners of Agriculture and Forestry,
Territory of Hawaii.

Gentlemen:

LIVE STOCK CONDITIONS IN GENERAL.

The past year has proved an exceedingly gratifying one in so far as live stock sanitary matters are concerned. With the exception of a couple of the smaller islands (Lanai and Niihau) conditions have been everything that could be desired for the furtherance and profitable development of the live stock industry. While the heavy influx of military men has necessitated the importation from the mainland of large quantities of meat, there can be no doubt that, under normal circumstances, the Territory would have been more than able to supply the local demand for all classes of meats, except possibly poultry, and there is every prospect that the modern methods adopted by the leading ranches, of utilizing only the highest class of pure bred breeding animals, will double the output of either beef, mutton or pork and enable the local interests to supply the demands of even this inflated meat-consuming population, at prices which of necessity must be profitable, owing to the distance from the nearest available market, and to the fact that grass fed and finished beef and mutton of unexcelled quality, can be produced here without resort to the use of concentrated feeds (grain, corn). Climatic conditions have been favorable and, as stated, the ranches which, a few years ago, foresaw the coming demand and prepared for it by the importation of high class breeding animals are now harvesting the reward of their enterprise. The value of a finished carcass of beef has practically doubled, considering the earlier maturity, the increased percentage of valuable cuts as compared to waste and the rise in price resulting from demand. When to this is added the reduction in cost of production and marketing which is bound to result from coöperation, as well as from competition, there can be no doubt that Hawaii will hold its own as a meat market for the local demand.

Pork, of which large quantities are consumed, especially by the oriental population, is now being supplied entirely from local sources. A few years ago there were imported annually from 6,000 to 8,000 live butcher hogs, while at the present time and for more than two years past not a single hog, and comparatively little refrigerated pork, has been brought here from the outside.

Poultry, eggs and dairy products, however, remain far behind where the question is of local supply. Practically all milk is consumed as such, and what little butter is produced rarely reaches the market. No more ideal climatic conditions could be found for poultry raising, and the demand for eggs and chickens is enormous and still there does not, to my knowledge, exist a single poultry farm worth the name in the islands. Diseases of poultry are few and easily controlled and the vexing question of housing is a negligible one here. Nevertheless, I have seen experienced poultry raisers with money to invest return to the mainland after spending weeks in vain searching for a suitable location for a chicken ranch, either as homesteaders, lessees or purchasers.

DISEASES OF LIVE STOCK.

The past year has been practically devoid of any serious outbreak of either infectious or contagious diseases among live stock, while parasitic diseases have continued to decrease with improved methods in handling and caring for the animals. Glanders among horse stock seems practically to have disappeared since the continued introduction of the infection with imported animals has been stopped by means of inspection, testing and quarantine. Here again, the climatic conditions undoubtedly have been of great value as there can be no doubt that many cases recover, temporarily at least, and some perhaps permanently. The total absence of closed or ill ventilated stables is the most important factor in the natural decrease of this scourge. Next to this the constant vigilance of the deputy territorial veterinarians who sooner or later are sure to locate even cases which are deliberately being hidden, in connection with the increased knowledge of the dangerous nature of the disease, have done much to cause either the destruction or at least the isolation, whether clandestine or not, of suspicious cases. To this must be added the effect of the law enacted by the last legislature making it a misdemeanor to sell or dispose of an animal affected with or suspected of having glanders and making the vendor responsible for any damages or loss resulting from such a transaction. The immense advance in the prices of horses and mules has likewise had a tendency toward the prolongation of life of all work animals through increased efforts on the part of owners and employees in protecting them from exposure to infection, and not the least direct result thereof is the elimination of the public watering trough or the indiscriminate watering of horse stock at places where the nature of the supply is in the least doubtful. The dissemination of knowledge along these lines through the published reports of the Board has, possibly more than anything else, been responsible for this most remarkable decrease in a disease which in less favorably located countries, still remains at the head of the list of destructive diseases. But obviating further discussion as to which of

these contributing factors is the most important, the fact remains that glanders has practically disappeared or else is effectively hiding itself, and it is safe to conclude that so long as the source of supply of fresh infection remains at zero, so long as no fresh cases of glanders are allowed to enter the Territory from without—and we continue to pay the price, eternal vigilance—so long will we remain free from the disease. On the other hand, let us relax and listen to the arguments of those whose source of income is at all depending upon the number of animals they sell, commensurate to a great extent with the number of animals which die, and whose chief argument is, that no case of glanders has arrived here from without for the past four years, and that consequently the regulations pertaining to importation are obsolete and no longer required,—and I feel confident that it would be but a very short time before we would have the disease with us again. The pass has been reached where the purchaser of live stock on the mainland has only to mention the fact that he comes from Hawaii when the dishonest dealer disappears. Let us rescind our regulations in the least, and the old conditions, when Hawaii—being 2,000 miles away—was considered the safest dumping ground for reacting horses and cattle, would speedily come to life again.

What has been said above in regard to glanders among horse stock applies with almost equal force to tuberculosis of cattle. The climatic conditions, allowing of open stables the year around, are entirely in favor of the eradication of the disease. Many cases undoubtedly make a temporary or apparent recovery, and only a small percentage ever reach the fatal termination, except when accompanied by advanced age. The regulations of the Board pertaining to the inspection and testing of cattle intended for importation, have effectively put an end to the further introduction of the disease from without. The eradication of the disease from the local herds has constituted the main work of this division for the past three years. A splendid spirit of coöperation, coupled with unexcelled willingness to sacrifice the affected animals, have characterized the campaign against the disease, making it possible to practically eradicate it from the City and County of Honolulu, without using either coercive measure or compensating the owners of diseased animals, even partly, for their losses. The same educational measures, the regular publication of monthly reports on the work of the division, has created a tendency on the part of milk consumers to demand clean milk, this is, milk originating on premises where no diseased (reacting) animals are kept, and where the milk is drawn and handled under sanitary conditions. In this work this division has had the full assistance of the local Board of Supervisors as well as the co-operation of the Honolulu Dairymen's Association. The former, through the office of the county physician, delegated its milk inspector to assist the testing of more than 5,000 dairy animals,

while the latter installed the most modern electric milk purifying devices, and what is most important, refused to receive milk except from clean herds and sanitary premises. At the same time the local Board of Health, through its Pure Food Commissioner, coöperated by enforcing the requirements of the statutes pertaining to the official milk standards, with the result that the City of Honolulu may be said to have a milk supply second to none and equal to the best of any city of its size in the United States.

The adoption of the intradermal method of tuberculin testing has, so to speak, revolutionized the campaign of eradication of bovine tuberculosis, compelling, as it does, the confidence of the owners, and at the same time obviating the many inconveniences and objectionable features of the old subcutaneous method. The fact that an owner can see for himself whether an animal reacts or not, that he no longer has to blindly accept the word of the inspector—frequently in doubt himself as to whether the temperature record spells positive or negative—has by one stroke done away with ninety per cent. of the old objections to having the animal tested, and when a majority of the consumers demand of the producer to know whether the cows have been treated and whether any of the reactors are left on the premises before leaving an order for milk to be delivered at his home, then the moral effect becomes binding, and the result comes very close to one hundred per cent. of "clean" dairies, as is now the case in Honolulu. It is the aim of this division to extend the work of eradication of bovine tuberculosis to the entire group, and if the same spirit is found to prevail on the other Islands as on Oahu, the end is in view. With the assistance of the Deputy Territorial Veterinarians on the other islands, who must be remunerated for the time given to the work, and with the necessary funds for traveling expenses for an inspector and an assistant sent out from this office, with an automobile, it is anticipated that a sufficient number of milk producers will be found willing to have their herds cleaned up, to compel the balance to either follow suit or go out of the business.

The only disease which has at all caused any alarm during the past year is *cerebro spinal meningitis* among horses and mules. Outbreaks of this have occurred on all four of the principal islands, but especially on Maui. In accordance with the latest views on the subject the disease must be classified as a *toxaemia*, due to the assimilation of musty or mouldy feed, rather than as an infectious disease. The condition cannot be transmitted from animal to animal, even by direct inoculation, and can always be controlled when it is possible to locate the existing cause, which is generally found to be musty grain or possibly water found to be contaminated by decomposing vegetable matter. A rather severe outbreak of this disease was investigated during the past year, and an attempt to stop it was made by applying Pasteur filters to the water pipes supplying the stables where the affected ani-

mals had contracted the disease. Owing to a considerable amount of sediment in the water the filters soon became clogged, and the experiment had to be abandoned. The principle, however, is no doubt correct and if the mechanical difficulties could be surmounted the disease could most likely be controlled or prevented by means of the filters. These would at the same time remove the eggs and embryos of intestinal parasites which, I am inclined to believe, always play a certain part where nervous symptoms appear endemically among horse stock.

Rabies in Dogs. During the latter part of the last calendar year the attention of the Board was called to the fact that rabies among dogs was quite prevalent in certain parts of California, and so long as this Territory was practically unprotected against an invasion of the disease, instructions were issued from this division to prepare a regulation for the purpose of preventing it from gaining entrance here. A thorough investigation of the subject proved that preventive measures were urgently needed, and while the resulting regulation did not go into effect until March 1st of the present year, it was considered well to mention the matter in this report so long as subsequent developments have caused the establishment of a four months' quarantine against dogs, and made the enforcement of the same one of the most important branches of work of this division.

By inquiry through official channels it has been learned that the present outbreak of rabies in California alone has already demanded a toll of not less than nine human lives from hydrophobia, while hundreds (officially reported cases) of dogs and other domestic animals have succumbed to rabies or have been destroyed after being exposed to the disease through bites inflicted by infected animals. The seriousness of the situation is best realized by stating that it has become necessary to establish not less than eight official stations for administering the Pasteur treatment to persons bitten by rabid dogs, in California alone, and that similar measures have been, or are being taken by neighboring states.

This Territory has, as stated, protected itself by the enforcement of a rigid quarantine against all dogs coming from or through countries where the disease is known to exist, and by a campaign of eradication of ownerless dogs within the Territory. As there can be little doubt that the entrance of the disease into this Territory, in its present unprepared state, would prove nothing short of a calamity, it is to be hoped that the measures now in force will prove effective, until such time as the respective authorities shall be able to cope with it and be prepared to protect human life as well as that of dogs and other domestic animals as is now being done by this Board. To postpone the preparation for administering the Pasteur treatment, until the disease is actually here, would seem somewhat risky in view of the distance we are removed from the nearest place where it can now be obtained, and it is therefore urgently recommended that steps be taken

without delay for the establishment of a Pasteur laboratory in Honolulu.

Respectfully submitted,

VICTOR A. NORGAARD,
Territorial Veterinarian.

FRUIT FLY CAMPAIGN.

Honolulu, August 1, 1912.

To the Commissioners of the Board of Agriculture and Forestry.

Gentlemen:—I am pleased to report that during the past two months (June and July) there has been a gradual but marked improvement in the condition of infestation throughout the area of Honolulu covered by existing regulations. The same may be said, in a measure, of portions of outside but adjacent territory. In the latter instance the apparently improved condition may to some extent be due to the few wild guava at present in fruit, although the mountain apples in the valleys, which are now in season, show very little, if any, infestation at all. The improvement in Honolulu gardens is undoubtedly due in part to a better and more general coöperation on the part of householders, who are now taking more interest in the work of the campaign and particularly in the proper disposition of their fallen fruit. Very much better results would be obtained if the whole community combined in an every day "clean up" and the City and County government could be prevailed upon to adopt the daily free garbage throughout the city and suburbs, which I have strenuously advocated since the beginning of the campaign. Credit, however, should be given the County Supervisors for having co-operated in our campaign work to the extent that the incinerator was again placed in commission at the service of the public after having been closed down during a long period. Had it not been for the effective destruction of the large quantities of fruits taken to the incinerator by the Garbage Department and the additional service of special outside transportation arranged for by the Board of Agriculture, the outcome of the campaign at this time would have been obviously different. As it is, there is, as already stated, room for much improvement in the garbage transportation system, which, however, can hardly be remedied until this is made free to all.

Since my last report a special corps of inspectors under the immediate supervision of Mr. Weinland have continued spraying with "Mally's" arsenate of lead solution areas of fruit trees in local gardens. During the past two months the spray gang has covered the districts four times, which is as much as the limited

appropriation has thus far permitted. For reasons explained in previous reports, it was found impracticable to undertake systematic spraying with poisoned bait solution in conjunction with that of "clean culture" until the Territory was reasonably assured of financial assistance from Congress. This combination method of combating the pest, other than on experimental lines, was therefore not possible until last May, at which time assurances were received that the Congressional appropriation asked for would probably be granted. Unfortunately circumstances of a political nature at Washington, D. C., have temporarily stalled several of the large appropriation bills now before Congress, in one of which our item is included. It is expected, however, that these bills will have favorable attention before adjournment of Congress during August. In the meantime the departure from Washington of the representative (Dr. Back) of the U. S. Bureau of Entomology has been indefinitely postponed. Advices received by me from the Chief of the Bureau state that Dr. Black will leave just as soon as Congress finally passes the appropriation bills referred to.

Many complaints have been made regarding the peculiar condition affecting a very large percentage of mango fruits this season. In the earlier part of the season it was supposed that this condition, which is one of decay whilst on the tree, was due to attack of the Mediterranean fruit fly. It soon became apparent that this latter part had nothing whatever to do with the matter nor was this particular form of rottenness caused by a fungus disease, as originally suspected. Special breeding experiments with this class of rotted fruit were undertaken in the laboratory, the result being that no fruit fly was bred from same, but in every such case it has been found that the seed was attacked by the mango weevil, which, it appears, is exceedingly prevalent throughout Honolulu this season. The attack of the weevil in the fruit undoubtedly brings about fermentation and the subsequent rottenness complained of. These facts have been corroborated by the U. S. Experimental Station, to the Director of which my thanks are due for courtesies rendered.

The insular conditions of infestation remain the same, Hilo, Puna and Kau on the Island of Hawaii being the only districts in which the fruit fly has not yet been observed. From personal observations, as well as from information received, I am led to believe that the inspection conducted by our island neighbors on the arrival of steamers from infested ports has not been as efficient as it should have been if it was intended to keep the pest out. There are, however, reasonable excuses to offer for such a state of affairs, the principal ones being the lack of funds to pay a sufficient force of efficient inspectors at the many terminal and way ports touched by our inter-island steamers and the absence of necessary legislation making it legally possible to search the passenger and his baggage when embarking on or disembarking from

inter-island steamers without a search warrant. It has been previously mentioned that all such inspection must, as a result, be perfunctory. Many of the districts have contributed financially and otherwise with a view to employing inspectors, for their special sections of territory, but not to a sufficient extent to ensure the appointment of special men for the important work required. Even at this moment the district of Hilo has practically thrown up its hands and the inspection work at its main port is not now being carried out as efficiently as it should be because of the alleged impossibility of controlling the thoroughfares leading into that district from Hamakua, where the pest has already been admitted by means of either the Kohala belt road or through one of the Hamakua ports. It is, therefore, quite natural to suppose that in a very short time the fruit fly will be found throughout Hilo and it will then only be a matter of a few months before it passes through Puna into the Kau district. The last named section is well guarded on the Hilo side by a locked gate on the belt road at Kapapala, but the Kona side, I am informed, is not so well cared for and as Kona is infested throughout, it will be an easy matter unless the greatest care is taken, for the pest to pass into Kau by means of infested fruit on the person or in the baggage of any passengers entering the latter section by that end of the belt road. The same arguments apply to the landings of Punaluu and Honuapo, in Kau, which are the calling ports of steamers bringing freight and passengers from other infested islands or districts. In my opinion the only successful inter-island inspection and method of control on the adjacent islands would have been such as Federal officers would have been most likely to pursue under U. S. laws. It is well admitted that officers of the Federal government, backed by a sufficiently large appropriation, can better handle the traveling public and the inspection of their baggage, as well as that of general freight, at ports of disembarkation in this insular territory than can the territorial or county officials. The Federal officer will take but little notice of inconvenience or delays occurring because of any necessary inspection he has to perform in his line of duty and furthermore he is not so subject to influence and unjust criticism as our insular officials.

The latest information from Dr. Silvestri is that he is now well on his way to the section of Africa where he hopes to meet with a measure of success in his search for an effective parasite on the Mediterranean fruit fly and Cotton Boll worm. Arrangements were made through Governor Frear and the State Department at Washington so that Dr. Silvestri might receive credentials from and the backing of the several European nations in control of sections of the African continent where the explorer is liable to meet with difficulties of one kind or another unless armed with the proper official authority.

For reasons previously explained, it has become necessary to

modify the existing regulations of quarantine on certain fruits and vegetables which it may be necessary to transport from one infested island or district to another.

The Board recognizing this fact submitted a request to the Governor to amend Regulations X, XIV and XV pertaining to the sanitary horticultural conditions in Honolulu, Hawaii and Maui. Final action has been temporarily delayed due to the fact that it is the desire of the administration to embody the above three regulations into one, which, under present conditions as to infestation, will now better answer the purpose of the Board.

Respectfully submitted,

W. M. GIFFARD,
Director, Fruit Fly Campaign, T. H.

DIVISION OF ANIMAL INDUSTRY.

REPORT FOR JUNE.

Hon. W. M. Giffard, President and Executive Officer,
Board of Agriculture and Forestry.

Sir:—I beg to report on the work of the Division of Animal Industry for the month of June, as follows:

Tuberculosis Control Work.—A comparatively small number of cattle have been tested during the month, the prolonged drouth having made it impossible to finish this important undertaking. There still remain about 2000 head of cattle, all range stock, to be tested and with the coming of the bean season, which promises an unusually heavy crop, it is expected that the remaining herds can be gathered and tested. In the meantime all reacting animals have been removed from the dairy herds and the milk supply of the city can safely be pronounced free from tuberculosis infection.

Importation, Inspection and Quarantine.—As will be seen from the detail report hereto appended, a large number of live stock, especially horses and mules, arrived from the mainland, one steamer alone bringing 136 head. Fortunately most of the horse stock came from the Central and Northwestern States and were shipped via Portland; otherwise it is doubtful whether the Quarantine Station would have been large enough to accommodate them all. A considerable number of brood mares, destined for Maui, were allowed to finish their quarantine period on that island under the supervision of the local representative of this office. With the exception of a few cases of influenza and shipping fever, all the animals arrived in good condition.

The congested state of the dog quarantine division was relieved

on the 19th of the month by the discharge of the 16 performing dogs mentioned in my last report and which it had become necessary to furnish quarters for while awaiting the departure of their steamer.

There are at the present time 17 dogs in quarantine, but a number of these, the first arrivals after the rabies regulation went into effect, will be released during the month of July.

The 16 dogs in quarantine at Schofield Barracks have been visited regularly, at least once a week, and do not seem to suffer any from their confinement. This is undoubtedly due to the elevation and the much lower temperature which they enjoy at Leilehua as compared to our station on the Beach Road.

The construction of six additional kennels with twelve houses was finished by the middle of the month and there now only remains the building of a concrete tank for the use of spaniels and other long-haired dogs which suffer much from the heat unless they have frequent access to a pool of water. Such a concrete tank with the required plumbing and with a corrugated iron roof over is estimated to cost \$116—(Oss) and will, I believe, add materially to the welfare of the animals during their prolonged detention, besides demonstrating to the owners that everything reasonable is being done for their pets. For these reasons I consider this tank a necessity and would respectfully ask the Board to allow the estimated sum for its construction. In case of favorable action there will still remain an unexpended balance of \$200 from the sum at first recommended as necessary for the completion of the Dog Quarantine Station.

Respectfully submitted,

VICTOR A. NORGAARD,
Territorial Veterinarian.

REPORT FOR JULY.

Honolulu, August 1, 1912.

Hon. W. M. Giffard, President, Board of Agriculture and Forestry.

Sir:—I beg to submit herewith a report on the work of the Division of Animal Industry for the month of July, 1912.

IMPORTATION, INSPECTION AND QUARANTINE.

An unusually large number of domestic animals of various classes and breeds have arrived during the past month. Of work animals, nearly one hundred head arrived, mostly mules, and all of superior quality. Of this number 75 are now in quarantine where they will remain until the 14th inst. At the Hilo Quarantine Station there are now 32 mules, which are to be released

on the 10th inst. This fact is mentioned because the Deputy Territorial Veterinarian from Hilo, Dr. Elliot, is in the Queen's Hospital here, having been operated on for appendicitis, and in case he does not recover in time it will be necessary to send an inspector from this office in order to pass on and release these animals.

Of breeding stock, there arrived four large jacks, which go to the Parker Ranch for mule breeding. This ranch has, during the past four years, endeavored to produce mares of sufficient size to raise large mules from, and there is every indication that before long a large percentage of the mules, which are now being imported here annually, will be raised in the Territory. By the exclusive use of large imported stallions, principally Percherons and German Coach, the above mentioned ranch has succeeded in developing both the size and the quality of its brood mares, several hundred of which will now be bred to the imported jacks, thereby adding an immensely important branch to the live stock industry of the Territory.

By reference to the annual reports of this division for the past six years, it will be seen that every effort has been made to get the stock breeders here to take up mule breeding and it is therefore highly gratifying to see that the end is finally in view. Both feed and climate are ideal for the purpose in many localities here, especially in the mountain pastures on Hawaii, Maui and Molokai, and it now only remains to be demonstrated if mules that are raised here will possess the same amount of stamina, that is, energy and endurance, as the imported mules, and there is every reason to believe that such will be the case.

Another importation of equal importance and undertaken by the same ranch was the arrival a few days ago of a number of the very finest Hereford heifers, which will form the nucleus of a breeding herd which, with the blue ribbon bulls which already have arrived, will rival any breeding herd in the United States. Too much credit cannot be given to the management of this large ranch, which supplies more than 90 per cent. of all the beef consumed in Honolulu, for the excellent quality of this most important food product which is now constantly available here, besides which these importations of the Parker Ranch have made it possible for less favorably situated cattle breeders to obtain high class breeding animals without having to send away for them. In this way the entire Territory is benefited and it is safe to predict that before long the erstwhile long-horned and long-legged range cattle will be a thing of the past in these islands.

In absolute contrast to the above stands the local poultry industry. During the past month not less than 137 crates of live poultry arrived at this port alone, many of the crates holding five or six dozen birds each and nearly all of egg-laying breeds. This is one of the problems which has been repeatedly discussed in these reports but instead of getting better it seems that the im-

portations are constantly increasing. Vast quantities of cold storage eggs and butchered poultry are constantly arriving, and while the demand has increased greatly with the military invasion, the local supply seems to be diminishing instead of responding to it. In no previous month, not even at Thanksgiving or Christmas time, do I remember seeing such quantities of live poultry arriving here, and still I know of no more ideal conditions for poultry raising than those which obtain here, barring the cost of feed. But that one objection is easily offset by the prices which poultry and eggs command here. There are no diseases worth mentioning and costly housing is uncalled for, and still such a thing as a "Chicken Ranch" is unknown here.

During the past month there arrived ten dogs, of which number eight were permanent arrivals, while two only belonged to temporary visitors—theatrical performers—and which have already departed. Twenty-two dogs are now in quarantine and the station is practically full. Where sex and other conditions permit of it, more than one dog is placed in each kennel, but this can, as stated, be done only with animals which arrive at the same time or approximately so.

In connection with the dog quarantine, I beg to say that a great deal of the keeper's time is taken up with these animals, and that with more than one hundred head of large animals in the station, as at the present time, I have to ask the Board's permission, in case it becomes absolutely necessary, to temporarily employ a man to help the keeper out, for a week or two perhaps. With so many animals there are constant repairs to be made to fences and gates, while feeding, watering and hauling of manure consume a great deal of time, owing to the not inconsiderable distances that feed and manure must be hauled by means of a wheelbarrow, in heavy sand.

The dogs quarantined at Schofield Barracks have been visited regularly once a week, and all appear to be doing well so far. One of these, belonging to Capt. Apple, will be released today, while the other 15 will remain in quarantine until September 11th.

An application from Mr. Munro, of Lanai, for the admission of three dogs from New Zealand, without quarantine, is submitted for the consideration of the Board, with the recommendation that the same be granted if, upon arrival, the required certificates of health are found satisfactory.

TUBERCULOSIS CONTROL WORK.

It will be seen from the appended report of my assistant, several hundred head of cattle have been tested during the past month and all reacting animals have been branded and removed from the herds where found.

GLANDERS.

This disease has unfortunately made its appearance again, and under most annoying circumstances. At the request of the sheriff, a horse which had been found wandering in the streets until placed in the Kalihi pound was examined and was found to be suffering from typical glanders. Though the sheriff detailed two officers to try to locate the owner, they did not succeed, and the horse was shot. As the animal was suffering from a profuse discharge from the nose, it is to be feared that other animals may have become infected, but so long as the owner, who undoubtedly was aware of the animal's condition, could not be found, no further measures could be taken to prevent the spread of the disease.

A hitherto *unknown disease* has made its appearance in several local stables, a total of four cases having come under observation, one of which has died. The disease resembles tetanus or lockjaw to a certain extent, and may possibly prove to be a toxæmia, due to intestinal parasites. Unfortunately no opportunity to make a post mortem examination has presented itself, the one fatal case not being reported in time for this purpose.

RABIES.

A total of 191 ownerless and stray dogs have been caught and destroyed in the gas chamber in the jail yard.

From reports received from the health authorities of California and Oregon, it appears that rabies is spreading steadily and the Board's action in enforcing a strict quarantine against all dogs coming from or through infected countries would therefore seem fully justified.

Very respectfully,

VICTOR A. NORGAARD,
Territorial Veterinarian.

 REPORTS OF ASSISTANT VETERINARIAN.

Honolulu, June 30, 1912.

Dr. Victor A. Nørgaard, Chief of Division of Animal Industry.

Sir:—I have the honor to submit herewith a report on the work accomplished during the past month.

TUBERCULOSIS CONTROL.

The work in this line has consisted of testing the new cattle taken into the different dairies. This amounted to a total of 55 head, scattered in eight different dairies, all of which passed the

test and were tagged in the usual manner. The large majority of these animals had been purchased in the district of Kona, Hawaii.

The following is a tabulated list of the dairies visited:

- June 3-5—
 Kamehameha Schools, 1 cow.
 T. Fernandez, 3 cows, 1 bull.
- June 21-24—
 M. Riedell, 1 cow.
 M. Kawamura, 3 cows.
- June 24-26—
 S. T. Allencastre, 1 cow.
 T. W. McGuire, 10 cows, 1 bull.
 T. Gouveira, 19 cows.
- June 25-27—
 M. Gomes, 14 cows, 1 bull.

EPIZOOTIC LYMPHANGITIS.

On June 14 my attention was called, by Dr. L. E. Case, to a mule in the Public Works stables which had a suspicious discharge from the nose.

In company with Dr. Case I made an examination of the animal, with the following description:

Mule; female; about 20 years old; was crippled to some extent by a fall on the knees. The animal had been losing flesh for some time and the knees were healing very slowly. There was a bi-lateral discharge from the nose and numerous ulcers upon the nasal septum; sub-maxillary glands slightly swollen.

I made no conclusive diagnosis but regarded the animal as showing symptoms approaching those of glanders and ordered its immediate removal to the Quarantine Station, there to be subjected to the Mallein test by Dr. L. E. Case. Dr. Case was further instructed to give the entire stables a careful and thorough disinfection, full particulars being given him as to the method, and all litter in the yards raked together and buried. The disinfecting took place under my supervision and the stables pronounced clean after a final inspection by Dr. Nörsgaard and myself.

Upon seeing the mule at the Quarantine Station Dr. Nörsgaard pronounced the case as one of Epizootic Lymphangitis and predicted the failure of the test to show a reaction, which diagnosis and prediction were substantiated by Dr. L. E. Case's report of no reaction from the Mallein test.

On June 17 the mule and a glandered horse belonging to P. M. Pond, which we had had at the station for some time and which had reacted to several methods of Mallein testing, were taken to the Channel wharf where they were shot and towed out to sea.

INSPECTION OF DOGS AT SCHOFIELD BARRACKS.

During the month of June four trips were taken to Schofield Barracks for the purpose of seeing if the rules and regulations of the Board, concerning the dog quarantine, were being carried out in the proper manner. Everything was found to be going O. K. and while the quarantine pens are not much to look at and loosely put together they seem to be holding the dogs all right at the present time, but if rabies should break out in any of them I hardly think that it would long resist the furious attacks which would be made upon it.

Importations of live stock at the port of Honolulu for the month of June:

- S. S. "Virginian," Seattle, June 3—
 45 mules, 19 horses—Q. M. Dept.
 22 mules, 50 horses—Chas. H. Bellina.
- S. S. "Lurline," San Francisco, June 5—
 2 horses—Major Cheatham.
 2 hogs—W. F. & Co.
 2 cats—Mr. Clark.
 9 crates poultry.
- S. S. "Sonoma," San Francisco, June 7—
 13 crates poultry.
- S. S. "Wilhelmina," San Francisco, June 11—
 4 crates poultry.
- S. S. "Manchuria," San Francisco, June 12—
 1 dog—Harold Castle; quarantined for 4 months.
- S. S. "Honolulan," San Francisco, June 19—
 3 Holstein bulls—Mr. Isenberg.
 14 mules, 10 mares—N. H. Churchill.
 2 hogs—W. F. & Co.
 13 crates poultry.
- S. S. "Ventura," San Francisco, June 27—
 1 dog (Boston bull)—Mr. Wood; quarantined for 4 months.
 5 crates poultry—M. Gonsalves.

Respectfully submitted,

LEONARD N. CASE,
 Assistant Territorial Veterinarian.

Honolulu, July 31, 1912.

Dr. Victor A. Nørgaard, Chief of Division of Animal Industry.

Sir:—I beg to submit herewith a report of the routine work of this Division:

TUBERCULOSIS CONTROL.

The following dairies were visited and cattle tested:

1st to 3d—M. Gomes—6 cows, all passed.

1st to 3d—J. P. Mendonca—1 cow, passed.

11th to 13th—Isenberg—2 cows, passed.

23d to 25th—Isenberg—179 cows, 3 bulls; 163 passed, 19 condemned.

26th to 29th—Isenberg—134 cows, 4 bulls; 120 passed, 18 condemned.

All reactions were typical and unmistakable; all were well defined and three were large enough to be easily seen across the corral and were, in fact, the largest swellings which I have so far observed. They were oval in shape and were, as near as one could judge, $1\frac{1}{2}'' \times 2''$ in size, firm to the touch but not hard, and exhibited no heat or pain, in fact, were typical reactions.

It has been a disputed point as whether or not more time should be allowed between the time of injection and the time of examination. The evidence gathered on this point during this last test practically settles the question in favor of a period of 72 hours elapsing before the examination is made.

In the bunch of 138 head seventy-two hours were allowed to elapse before an examination was made. On the forty-eighth hour the foreman of the ranch made a very careful examination and picked out fifteen reactors, the remaining ones, he declared, gave no evidence of a swelling of any description. When I made my examination, twenty-four hours later, I picked out eighteen which gave typical reactions. His fifteen corresponded with fifteen which I had declared tuberculous and I had found three more which he was emphatic in declaring had shown no indications of reacting on the forty-eighth hour. Thus the importance of the extra twenty-four hours.

Without doubt the majority of tuberculous animals can be picked out at the end of forty-eight hours, but as has been demonstrated there will be in some instances a few which will not show the characteristic reaction until a later time which makes it a necessity to wait seventy-two hours before making a final examination. By doing so nothing is lost and everything gained, a reactor cannot become lost as the swelling remains five or six days, but the entire test may be rendered useless if sufficient time is not allowed for its proper working.

GLANDERS.

Glanders has again made its appearance in, to all intents and purposes, an ownerless horse which had escaped from pasture and brought to the Kalihi Pound. This animal gave typical symptoms of glanders, there being a bilateral discharge from the nose, ulcers on the nasal septum and swollen sub-maxillary glands.

The animal was held in the pound for a few days in a vain attempt to discover the owner and while there was used for experiment in testing the accuracy of an intro-dermal Mallein test which I have had under consideration for some time, a test based upon the intra-dermal tuberculin test and designed to facilitate the testing of horse stock in the detecting and eradication of glanders. The details of this experiment and the test in general will be taken up in a future report.

The following is the list of importations of live stock at the port of Honolulu during the past month:

- S. S. "Hyades," Seattle, July 2
 - 22 mules, 2 horses—G. Schuman.
 - 18 horses—J. H. Wilson.
 - S. S. "Lurline," San Francisco, July 3—
 - 3 polo ponies—Alexander & Baldwin.
 - 1 cat—Miss B. B. Cox.
 - 53 crates poultry.
 - S. S. "Manchuria," San Francisco, July 4—
 - 1 crate white rats.
 - S. S. "Wilhelmina," San Francisco, July 9—
 - 16 crates poultry.
 - 1 dog—Mrs. Bodrere—quarantined for 4 months.
 - 1 dog—Raymond Teal—quarantined for 4 months.
 - S. S. "Shinyo Maru," Yokohama, July 15—
 - 2 dogs, 1 crate geese, 1 cat, 2 goats, 2 monkeys, 2 crates poultry, 1 parrot—Maurice G. Raymond.
 - 3 crates Japanese games—K. Ohashi.
 - S. S. "Honolulan," San Francisco, July 17—
 - 6 horses, 1 crate chix, 1 colt—M. Ferreira.
 - 1 colt.
 - 1 Duroc-Jersey boar—Mr. Isenberg.
 - 2 dogs—W. F. & Co.—quarantined for 4 months.
 - S. S. "Zealandia," Vancouver, July 17—
 - 3 dogs—Dr. James Judd—quarantined for 4 months.
 - S. S. "Siberia," San Francisco, July 22—
 - 1 horse—Rosenberg Tank Co.
 - 12 crates poultry.
 - S. S. "Hilonian," Seattle, July 22—
 - 30 Shropshire rams—A. W. Carter.
- These rams were taken to the Quarantine Station where they were thoroughly dipped in a chloro-naptholeum bath and sheared before they started on their trip to Hawaii.
- Schooner "Hackfeld," Germany, July 24—
 - 1 dog—W. R. Shingle.

Was not subjected to quarantine as the required time of 120 days had been spent in transit, that is, 119 days were required to make the trip and the last day was spent on board ship at the dock.

S. S. "Lurline," San Francisco, July 31—
 4 mules—City Mill Co.
 30 " —Schuman Carriage Co.
 34 " —Club Stables.
 3 horses—Club Stables.
 4 jacks—A. W. Carter.
 10 cows—A. W. Carter (Hereford heifers).
 1 bull—A. W. Carter (Hereford).
 1 horse—W. F. & Co.
 23 crates poultry.
 3 crates hogs (Berkshire)—W. F. & Co.
 3 monkeys.
 3 crates pigeons.

The heifers and bull are now at the Quarantine Station where they will rest from their long journey. They will be carefully watched and tended to and finally sprayed with a disinfectant.

Respectfully submitted,

LEONARD N. CASE,
 Assistant Territorial Veterinarian.

DIVISION OF FORESTRY.

REPORT FOR JUNE.

Honolulu, July 8, 1912.

Board of Agriculture and Forestry, Honolulu.

Gentlemen:—I have the honor to submit as follows the routine report of the Division of Forestry for June, 1912:

My own time during June, outside of routine work, was largely given to the preparation of reports on several forest matters and to getting ready for the use of the members of the Board data in connection with the beginning of a new fiscal period.

Under the date of June 13, I submitted to the Committee on Forestry a detailed report upon the condition of the forest in the Kau Forest Reserve, Hawaii, the result of an examination made in May. Other reports, upon forest reserve projects, await only the completion of technical descriptions of boundary.

The revival of active interest in street tree planting in Honolulu, together with the usual number of calls for advice from persons wishing to know how best to plant or care for the trees and shrubs on their grounds, kept the Forest Nurseryman busy during June. The plant distribution for this month, while not heavy in point of numbers, was made up of a fairly large number of orders, from various parts of the Territory. This part of the

work of the Division of Forestry is not very much in evidence, but in the course of a year it benefits a good many people. As usual, Mr. Haughs' report for the month is transmitted herewith.

At the end of June the collections of botanical material belonging to the Board of Agriculture and Forestry, with the cases in which they are housed, were transferred from the office of the Board to the new building of the College of Hawaii in Manoa Valley. The custody of the herbarium is turned over to the College of Hawaii as a loan, on the condition that the specimens shall be properly cared for and made available for use. This transfer of material marks the close of the active participation of the Board of Agriculture and Forestry in the botanical survey of the Territory, but Mr. J. F. Rock will continue to serve on the Board staff as Consulting Botanist. Incidentally it may be noted that good progress is being made on Mr. Rock's book, "The Native Trees of Hawaii," which is based on the material collected by him while exclusively in the employ of the Board of Agriculture and Forestry.

Very respectfully,

RALPH S. HOSMER,
Superintendent of Forestry.

REPORT FOR JULY.

Honolulu, August 1, 1912.

Board of Commissioners of Agriculture and Forestry.

Gentlemen:—I have the honor to submit as follows the routine report of the Division of Forestry for the month of July, 1912:

During this month my own time has been divided between work in the field and in the office. I have made several inspection trips to various forest areas on the Island of Oahu, more particularly to government lands in Palolo, Lualualei and Waianae Valleys, and at Pupukea, as well as to privately-owned forest back of Waialua, Waianae and Kahuku in the well-being of which the government has an interest.

Toward the end of the month the Government Survey Office completed the technical descriptions of boundary of several forest reserve projects that had for some time been on the waiting list. This permitted the completion of my reports on these proposed reserves, which are now in the hands of the Board, or being typed for transmission.

TREE PLANTING.

During the month a number of corporations and individuals have given advance notice of their desire to secure seedling trees for planting out next winter. It is desirable that such applica-

tions be filed early, that there may be no delay in getting the plant material when the proper planting season arrives.

FOREST FIRES.

On June 26th a grass and brush fire occurred on the lot owned by Mr. Norman Campion in Palolo Valley. It is thought to have been started by children playing with matches. Fortunately the fire was put out by men living on adjoining lots before it reached the houses on the lot, or got away up the slope.

On July 20 and 21 a grass fire was reported from the lower slopes of the Koolau range near Wahiawa. Mr. W. M. Templeton, the local fire warden, states that it was controlled before doing serious damage. This fire was fought by cavalymen from Schofield Barracks. Another fire in the same district, this time at the end of the Waianae range, is reported as having burned over an area of grass land below the point called Maili, on the evening of July 27th. This fire was also fought by soldiers from Schofield Barracks.

Beyond knowing that the district fire warden secured men to fight them, I have not yet got the details in regard to these fires.

With the continued drought in so many parts of the Territory it is incumbent upon all persons who have occasion to burn brush, or to make other fires in the open, to exercise unusual precautions not to let the fire get beyond control. In a dry time one cannot be too careful.

MR. HAUGHS' REPORT.

Following the usual custom, the report of the Forest Nurseryman, giving the details of that phase of the Division of Forestry's work, is submitted herewith.

Very respectfully,

RALPH S. HOSMER,
Superintendent of Forestry.

FOREST NURSERYMAN'S REPORTS.

Honolulu, July 1, 1912.

R. S. Hosmer, Esq., Superintendent of Forestry.

Dear Sir:—I herewith submit a report of the principal work done during the month of June:

Nursery—Distribution of Plants.

	In seed boxes.	In boxes transplanted.	Pot grown.	Total.
Sold		50	360	410
Gratis	2,000	368	847	3,215
	2,000	418	1,207	3,625

Collections.

Collections on account of plants sold amounted to \$18.85.

Plantation Companies and Other Corporations.

From stock raised with labor supplied by plantation companies and other corporations we have received orders and supplied the following plants: 2,000 transplants in boxes and 300 pot grown.

Collecting Seed.

The two seed boys have been collecting around the city. The *Grevillea robusta* is now in season and considerable time will be required to get a sufficient quantity of this seed.

Experiment Garden, Makiki.

The two men have been transplanting and doing other routine work.

U. S. Experimental Planting, Nuuanu Valley.

The man employed for the purpose of taking care of the trees has been hoeing and clearing away grass.

Respectfully submitted,

DAVID HAUGHS,
Forest Nurseryman.

Honolulu, July 31, 1912.

R. S. Hosmer, Esq., Superintendent of Forestry.

Dear Sir:—I herewith submit a report of the principal work done during the month of July:

Nursery—Distribution of Plants.

	In seed boxes.	In boxes transplanted.	Pot grown.	Total.
Sold		50	208	258
Gratis	11,250	350	766	12,366
	11,250	400	974	12,624

Collections.

Collections on account of plants sold amounted to \$10.80.

Plantation Companies and Other Corporations.

700 pot grown and 500 plants in transplant boxes have been distributed. An order for 12,000 Ironwood in transplant boxes to be delivered ready to set out in November has been received. We are now getting the trees to fill this order transplanted at the Makiki Station.

Seed Collecting.

The two seed boys have been collecting *Grevillea robusta* and other seed around the city, also assisting in packing up trees and transplanting on occasions when orders require to be filled in a hurry.

Experiment Garden, Makiki.

Building up a stock for the fall planting, also attending to the plants belonging to the different corporations, constitute the principal work done.

U. S. Experimental Planting, Nuuanu Valley.

For several months the want of moisture has kept us from finishing the planting of a few of the plots. We have at the Makiki Station plants for this purpose ready to set out and we intend to plant them when the ground becomes moist enough.

Respectfully submitted,

DAVID HAUGHS,
Forest Nurseryman.

DIVISION OF ENTOMOLOGY.

REPORT FOR JUNE.

Honolulu, June 30, 1912.

Hon. Board of Commissioners of Agriculture and Forestry.

Gentlemen:—I respectfully submit my report of the work of the Division of Entomology for the month of June as follows:

During this month there arrived 32 vessels of which 19 carried vegetable matter. The usual careful inspection was made with the following results:

<i>Disposal with principal causes.</i>	<i>Lots.</i>	<i>Parcels.</i>
Passed as free from pests.....	793	12,972
Fumigated	9	179
Burned	29	89
Total inspected	8311	13,240

Rice Shipments.

24,672 bags of rice arrived from Japan during the month of June and were passed as free from pests, after careful examination.

Pests Intercepted.

36 packages of fruit and 31 packages of vegetables were confiscated from passengers and immigrants during the month. Much of this material was found infested. Several shipments of plants arrived from Manila on which were found ants, millipeds, cockroaches and scale insects. 21 boxes of peaches from California were infested with the peach moth (*Anarsia lineatella*) and were destroyed by burning in the incinerator.

Hilo Inspection.

Brother M. Newell reports the arrival of six vessels, 4 of which carried vegetable matter consisting of 127 lots and 1,757 packages which were passed as free from pests, except one package of plants which was infested with mites and maggots and was destroyed.

Inter-Island Inspection.

During the month of June 58 steamers were attended to and the following shipments were passed on:

410 bags of taro,
11 bags cocoanuts,
45 packages of various plants.

Total 466 packages inspected and passed.

The following packages were refused shipment:

175	packages of various fruits,
21	" vegetables,
8	" plants.

Total 204 packages inspected and refused shipment.

Among the fruit 3 packages of mangoes were found infested with the maggots of the fruit fly.

Respectfully yours,

E. M. EHRHORN,
Superintendent of Entomology.

REPORT FOR JULY.

Honolulu, July 31, 1912.

Hon. Board of Commissioners of Agriculture and Forestry.

Gentlemen:—I respectfully submit my report of the work of the Division of Entomology for the month of July as follows:

During the month there arrived 38 vessels of which 23 carried vegetable matter. The usual careful inspection was made with the following results:

<i>Disposal with principal causes.</i>	<i>Lots.</i>	<i>Parcels.</i>
Passed as free from pests.....	1,054	19,850
Fumigated	8	18
Burned	27	60
Total inspected	1,089	19,928

Rice Shipments.

29,648 bags of rice arrived from Japan during the month of July. These were passed as free from pests after careful examination. Owing to the possibility of some infested shipments arriving at this season of the year your Superintendent called on the leading importers of rice and asked them to unite on a systematic inspection at the port of Kobe, preferably under government supervision, and I also urged them to do their utmost to prevent any rice which has not previously been fumigated from being shipped here as such rice, if at all infested and placed on board the steamer will soon infest all the rice which has been fumigated and with which it would come in contact. The Japanese Merchants' Association has taken the matter up in a very business-like way and through their request the Japanese Consul has cabled his government about the matter. The Merchants' Association has also forwarded letters explaining the situation. Owing to the settling of the Channel wharf, the large rooms in

which we have been able to fumigate all infested rice and other produce arriving here, are now in such a leaky and unsafe condition as to render them worthless for our work. We are at a loss to know just what to do in case any very large infested shipment of rice or other produce should arrive here and it might be necessary for the Board to provide some large tight room for our work in the near future.

Pests Intercepted.

18 packages of fruit and 42 packages of vegetables were confiscated from passengers and immigrants during the month. Several packages contained colonies of ants and had to be fumigated before delivery.

Queen Bees.

During the month 3 Queen bees arrived by mail with attached certificates of inspection required by law. The package and attendant bees were destroyed after the Queen was taken out.

Beneficial Insects.

Two lots of carabid beetles were sent to the Board of Agriculture and Forestry by Dr. Burgess of the Gypsy Moth Parasite Laboratory, Melrose Highlands, Mass. These arrived in fairly good condition and have been liberated.

Inter-Island Inspection.

During the month of July, 70 steamers were attended to and the following shipments were passed:

41 packages of plants (mostly forest trees),
475 bags taro,
1 bag taro tops,
4 bags cocoanuts,

521 packages inspected and passed.

The following packages were refused shipment:

322 packages of various fruits,
25 " of vegetables,
8 " of plants.

355 packages inspected and refused shipment; 2 packages of tomatoes were found infested with maggots.

The postoffice department has revised the regulations concerning the transmission of insects, plants, etc., requiring a certificate of inspection of all shipments before they are forwarded by the local postoffice. This is another burden which has been thrust upon the many duties of your Superintendent and will no doubt

cause some annoyance and inconvenience to the general public. I attach herewith a copy of the regulation.

New Postal Regulations.

The following statement of the revised regulations of the post-office department concerning the transmission of insects through the mails has been kindly supplied by Dr. L. O. Howard, Chief of the Bureau of Entomology:

"Queen bees and their attendant bees, when accompanied by a certificate from a State or Government inspector that they have been inspected and found free of disease; beneficial insects, when shipped by departments of entomology in agricultural colleges and persons holding official entomological positions; other live insects, when addressed to the Bureau of Entomology of the United States Department of Agriculture, to departments of entomology in State agricultural colleges and to persons holding official entomological positions, and dried insects and dried reptiles may be sent in the mails when so put up as to render it practically impossible that the package shall be broken in transit, or the persons handling the same be injured, or the mail bags or their contents soiled.

"Nursery stock, including field-grown florists' stock, trees, shrubs, plants, vines, cuttings, grafts, acions and buds (which may carry injurious insects) may be admitted to the mails only when accompanied by a certificate from a State or Government inspector to the effect that said nursery stock has been inspected and found free from injurious insects."

Hilo Report.

Brother M. Newell reports the arrival of 7 steamers carrying vegetable matter amounting to 109 lots and 1,642 parcels, all of which are found free from pests. He comments on the fine appearance and condition of the California fruit.

Respectfully submitted,

E. M. EHRHORN,
Superintendent of Entomology.

THE SOIL AND THE PLANT.

Dr. E. J. Russell, of Rothamsted Experimental Station, has a paper in *Science Progress*," reviewing some recent American hypotheses which seem to upset several established points as to soil. Dr. Russell, after a careful examination, arrives at the following conclusion which indicates the differences as well:

The outstanding differences between Whitney's hypotheses and those more generally accepted may therefore be reduced to three:

(1) Whitney supposes all soils to be chemically alike in that all are made up of the same rock material; consequently the soil solution is the same in all cases. Other chemists, on the other hand, consider that the soil is more complex, containing colloidal decomposition products and a solution which not only differs in composition in different soils but also shows local variations in composition in different parts of the same soil.

(2) He further supposes that variations in concentration of the soil solution have no effect on the rate of growth of plants and that in consequence all soils are equally rich in plant food; added fertilizers owe their value to other than nutritive effects.

(3) He considers that infertility must therefore be due to other causes than lack of nutritive compounds; dismissing considerations of nutrition altogether, he supposes instead that infertility arises from the presence of toxic organic compounds, some of which at any rate may be plant excretions. We, on the other hand, attach great importance to the nutritive functions of soil constituents and of added fertilizers; while some of us agree that part of the infertility of "sour" soils may be due to toxic substances (and apparently the soils examined by Whitney and his colleagues were "sour" soils), we cannot accept the view that plants excrete toxic substances.

There is no doubt that the work of the Soil Bureau has suffered from leaving out of consideration all biological changes going on in the soil. The decomposition by micro-organisms of the residues of previous generations of plants gives rise beyond doubt to quantities of plant food, yet the function of this nutrient material is never considered; instead, attention is concentrated on possible toxic substances to the exclusion of useful substances. Thus the field of view is unduly restricted.

The investigations have, however, served a very useful purpose in stimulating inquiry and they have brought home the fact that the relationships between soils and plants are complex, it is no longer possible to take the old narrow view that the soil simply supplies food to the plant: the earlier papers compelled recognition of the fact that the size of the soil particles which regulate the water and air supply is more important than their chemical composition, and consequently that mechanical analysis is more useful than chemical analysis in characterizing soils; the later papers direct attention to possible toxins of which we may have some in our own "sour" soils. We can find much to criticise in the details of the experiments and still more in the conclusions drawn from them; not infrequently the facts themselves are in dispute. Above all we should like to see a re-examination of the fundamental positions based on definite crucial experiments and consideration of alternative hypotheses. But, whether further work support their hypotheses or not, Whitney, Cameron, Schreiner and their colleagues have made agricultural chemists re-examine their ideas on the soil, and such a reconsideration must in the end ad-

vance the subject, however troublesome or superfluous it may at the time appear.

FLOWERS OF THE PAPAYA.

It is well known in the West Indies that, although the male and female flowers of the papaya tree are usually produced on separate trees, flowers possessing both characteristics (hermaphrodite flowers) and arising in female inflorescences, are often found, and that it is also possible to cause a "male" tree to bear female flowers and ultimately fruits, by cutting it back.

L'Agriculture Pratique des Pays Chauds for October, 1911, gives attention to an exceptional case, where hermaphrodite flowers arose in a male inflorescence, in a note which describes a plant in the Jardin Colonial in Upper Guinea, near Kindia. This plant had already borne male flowers, without fruiting, when suddenly at its full flowering time, it produced long axillary inflorescences containing gamopetalous flowers with normally developed stamens and a rudimentary ovary. At the time of reporting, three fruits had appeared, each about 4 inches long, and soon after a young fruit about half as large. One of the fruits was plucked, and was found to contain numerous normal ovules. It was not expected, however, that these would attain a true maturity, as their stalks were exhibiting a yellowish tint which indicated premature ripening.

In presenting the note, mention is also made of the observation of a similar phenomenon, about 1887, by a French authority and by travelers in Central Africa.

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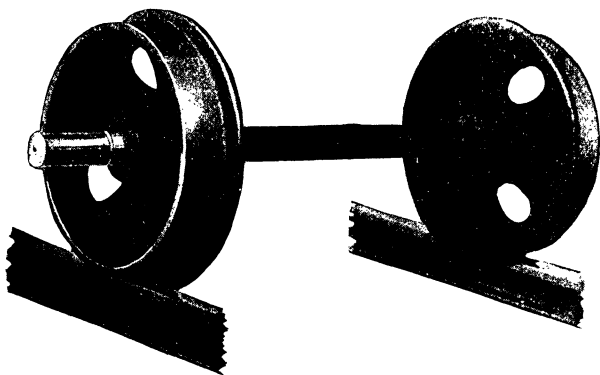
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PUBLICATIONS FOR DISTRIBUTION.

Any one or all of the publications listed below (except those marked *) will be sent to residents of this Territory, free, upon application to Mailing Clerk, P. O. Box 207, Honolulu.

BOARD.

Report of the Commissioner of Agriculture and Forestry for 1900; 66 pp.
Report of the Commissioner of Agriculture and Forestry for 1902; 88 pp.
* First Report of the Board of Commissioners of Agriculture and Forestry, from July 1, 1903, to December 31, 1904; 170 pp.
Second Report of the Board of Commissioners of Agriculture and Forestry, for the year ending December 31, 1905; 240 pp.; 8 plates; 10 text figures.
Third Report of the Board of Commissioners of Agriculture and Forestry, for the year ending December 31, 1906; 212 pp.; 3 plates; 4 maps; 7 text figures.
Fourth Report of the Board of Commissioners of Agriculture and Forestry, for the calendar year ending December 31, 1907; 202 pp.; 7 plates.
Fifth Report of the Board of Commissioners of Agriculture and Forestry, for the calendar year ending December 31, 1908; 218 pp.; 34 plates.
Report of the Board of Commissioners of Agriculture and Forestry, for the biennial period ending December 31, 1910; 240 pp.; 45 plates.
"Notice to Importers," by H. E. Cooper; 4 pp.; 1903.
"Digest of the Statutes Relating to Importation. Soils. Plants. Fruits, Vegetables, etc., into the Territory of Hawaii." General Circular No. 1; 6 pp.

PUBLICATIONS FOR DISTRIBUTION—Continued.

- "Important Notice to Ship Owners, Fruit Importers and Others Rules and Regulations Prohibiting the Introduction of Certain Pests and Animals into the Territory of Hawaii." General Circular No. 2; 3 pp.; 1904.
 "Law and Regulations, Importation and Inspection of Honey Bees and Honey." General Circular No. 3; 7 pp.; 1908.

"The Hawaiian Forester and Agriculturist," a monthly magazine. Vols. I to VII; 1904-1910. To be obtained from the Hawaiian Gazette Co., Honolulu. Price \$1 a year.

DIVISION OF FORESTRY.

- * "Forest and Ornamental Tree Seed for Sale at Government Nursery." Press Bulletin No. 1; 3 pp.; 1905.
 * "Suggestions in Regard to the Arbor Day Tree Planting Contest." Press Bulletin No. 2; 7 pp.; 1905.
 "An Offer of Practical Assistance to Tree Planters." Circular No. 1; 6 pp.; 1905.
 "Revised List of Forest and Ornamental Tree Seed for Sale at the Government Nursery." Press Bulletin No. 3; 4 pp.; 1906.
 * "Instructions for Propagating and Planting Forest Trees." Press Bulletin No. 4; 4 pp.; 1906.
 "Instructions for Planting Forest, Shade and Ornamental Trees." Press Bulletin No. 5; 7 pp.; 1909.
 "Na Hoakaka no ke Kanu Ana i na Laau Malumalu ame na Laau Hoohiawahiwa." Press Bulletin No. 6; 8 pp.; 1909.
 "Eucalyptus Culture in Hawaii," by Louis Margolin. Bulletin No. 1; 88 pp.; 12 plates; 1911.
 Report of the Division of Forestry, for the year ending December 31, 1905. Reprint from Second Report of the Board; 77 pp.; 5 plates.
 * Report of the Division of Forestry, for the year ending December 31, 1906. Reprint from Third Report of the Board; 123 pp.; 4 maps.
 Report of the Division of Forestry, for the year ending December 31, 1907. Reprint from Fourth Report of the Board; 70 pp.
 Report of the Division of Forestry, for the year ending December 31, 1908. Reprint from Fifth Report of the Board; 85 pp.
 Report of the Division of Forestry, for the biennial period ending December 31, 1910. Reprint from Report of the Board; 86 pp.; 22 plates.

DIVISION ON ENTOMOLOGY.

- "The Leaf-Hopper of the Sugar Cane," by R. C. L. Perkins. Bulletin No. 1; 38 pp.; 1903.
 ** "A Catalogue of the Hemipterous Family Aleyrodidae," by G. W. Kirkaldy, and "Aleyrodidae of Hawaii and Fiji with Descriptions of New Species," by Jacob Kotinsky. Bulletin No. 2; 102 pp.; 1 plate; 1907.
 * "On Some Diseases of Cane Specially Considered in Relation to the Leaf-Hopper Pest and to the Stripping of Cane," by R. C. L. Perkins. Press Bulletin No. 1; 4 pp.; 1904.
 "A Circular of Information," by Jacob Kotinsky. Circular No. 1; 8 pp.; 1905.
 "The Japanese Beetle Fungus," by Jacob Kotinsky and Bro. M. Newell. Circular No. 2; 4 pp., cut; 1905.
 Rule VII: "Concerning the Prevention of Distribution of the Mediterranean Fruit Fly"; unnumbered leaflet; 1910.
 Rule VIII: "Concerning the Importation of all Banana Fruit, Banana Shoots or Plants"; unnumbered leaflet; 1911.
 Report of the Division of Entomology, for the year ending December 31, 1905. Reprint from Second Report of the Board; 68 pp.; 3 plates; 10 text figures.
 Report of the Division of Entomology, for the year ending December 31, 1906. Reprint from Third Report of the Board; 25 pp.; 7 text figures.
 Report of the Division of Entomology, for the year ending December 31, 1907. Reprint from Fourth Report of the Board; 18 pp.; 1 plate.
 Report of the Division of Entomology, for the year ending December 31, 1908. Reprint from Fifth Report of the Board; 26 pp.; 2 plates.
 Report of the Division of Entomology, for the biennial period ending December 31, 1910. Reprint from Report of the Board; 70 pp.; 10 plates.

DIVISION OF ANIMAL INDUSTRY.

- * "Inspection of Imported Live Stock." Rule 1; 1 p.; 1905.
 * "Inspection and Testing of Imported Live Stock for Glanders and Tuberculosis." Rule 2; 1 p.; 1905.
 * "Concerning Glandered Horse Stock in the Territory." Rule 3; 1 p.; 1905.
 * "To Amend Rule 1, Inspection of Imported Live Stock." Rule 4; 1 p.; 1907.
 * "Quarantine of Horse Stock from California." Rule 8; 1 p.; 1908.
 "Rules and Regulations, Inspection and Testing of Live Stock." Rules and Laws. 11 pp.; unnumbered pamphlet; Revised 1910.
 Report of the Division of Animal Industry, for the year ending December 31, 1905. Reprint from Second Report of the Board; 62 pp.
 Report of the Division of Animal Industry, for the year ending December 31, 1906. Reprint from Third Report of the Board; 41 pp.; 3 plates.
 Report of the Division of Animal Industry, for the year ending December 31, 1907. Reprint from the Fourth Report of the Board; 104 pp.; 6 plates.
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